California Environmental Protection Agency AIR RESOURCES BOARD	YANMAR CO., LTD.	EXECUTIVE ORDER U-R-028-0116 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2003	3YDXL1.20D3N	1.204	Diesel	5000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection	Crane, Loader, Tractor, Dozer, Pump, Compressor

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbons (HC), oxides of nitrogen (NOx), or non-methane hydrocarbons plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kW-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
19 ≤ kW < 37	Tier 1	STD	N/A	N/A	9.5	5.5	0.80	20	15	50
		CERT	--	--	8.4	5.2	0.64	5	6	7

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 20th day of December 2002.

Raphael Susnowitz

for Allen Lyons, Chief
Mobile Source Operations Division

Engine Model S mary Form

Manufacturer: **Yanmar Co.,Ltd.**

Engine category: **Nonroad CI**

EPA Engine Family: **3YDXL1.20D3N**

Mfr Family Name: **N/A**

Process Code: **New Submission**

ATTACHMENT

EO U-R-028-0116

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
N/A	3TNE78A-EDM	27.7/3200	21.7	11.2	57.4/1920	24.9	7.9	EM
N/A	3TNE78A-ERJ	26.4/2800	22.9	10.6	57.9/1800	23.9	7.1	EM
N/A	3TNE78A-ERJ	26.4/2800	22.9	10.6	57.9/1800	23.9	7.1	EM
N/A	3TNE78A-EHP	27.3/3000	20.6	10.2	55.5/2200	23.0	8.3	EM
N/A	3TNE78A-ESA	27.0/3000	20.4	10.1	56.5/1800	23.4	7.0	EM
N/A	3TNE78A-EJ	27.0/3000	20.4	10.1	56.5/1800	23.4	7.0	EM
N/A	3TNE78A-EJS	27.0/3000	20.4	10.1	56.5/1800	23.4	7.0	EM
N/A	3TNE78A-EJF (22)	28.9/3200	24.0	12.6	57.6/2200	24.4	8.9	EM DDI
N/A	3TNE78A-EJF	28.9/3200	24.0	12.6	57.6/2200	24.4	8.9	EM
N/A	3TNE78A-EYA	27.0/3000	20.4	10.1	56.5/1800	23.4	7.0	EM
N/A	3TNE78A-EJM	26.6/3000	20.1	9.9	56.0/1800	23.2	6.9	EM
N/A	3TNE78A-EBE (18.7)	25.1/2800	21.9	10.1	57.4/1800	23.6	7.0	EM
N/A	3TNE78A-ESA	27.0/3000	20.4	10.1	56.5/1800	23.4	7.0	EM
N/A	3TNE78A-ESA	27.0/3000	20.4	10.1	56.5/1800	23.4	7.0	EM
N/A	3TNE78A-ESA	27.0/3000	20.4	10.1	56.5/1800	23.4	7.0	EM
N/A	3TNE78A-ESA	27.0/3000	20.4	10.1	56.5/1800	23.4	7.0	EM
N/A	3TNE78A-EPE	26.7/3000	20.2	10.0	56.2/1800	23.3	6.9	EM